

What is claimed is:

1. A bi-directional multi-point to point communication system, comprising:  
a hybrid fiber/coax distribution network having an optical fiber portion and a coaxial cable portion;

a head end terminal for downstream transmission of downstream control data and downstream telephony information in a first frequency bandwidth over the hybrid fiber/coax distribution network and for receipt of upstream telephony information and upstream control data in a second frequency bandwidth over the hybrid fiber/coax distribution network, the head end terminal including:

head end multicarrier modem means for modulating at least downstream telephony information on a plurality of orthogonal carriers in the first frequency bandwidth and for demodulating at least upstream telephony information modulated on a plurality of orthogonal carriers in the second frequency bandwidth;

head end controller means operatively connected to the head end multicarrier modem means for controlling transmission of the downstream telephony information and downstream control data and for controlling receipt of the upstream control data and upstream telephony information;

at least one service unit, each associated with at least one remote unit and operatively connected to the hybrid fiber/coax distribution network for upstream transmission of upstream telephony information and upstream control data in the second frequency bandwidth and for receipt of the downstream control data and downstream telephony information in the first frequency bandwidth, each service unit including:

service unit multicarrier modem means for modulating at least the upstream telephony information on at least one carrier orthogonal at the head end terminal to at least one other carrier of the second frequency bandwidth and for demodulating at least the downstream telephony

7000423-427060

information modulated on at least a band of a plurality of orthogonal carriers in the first frequency bandwidth;

service unit controller means operatively connected to the service unit multicarrier modem means for controlling the modulation of and demodulation performed by the service unit multicarrier modem means.